

ENVIRONMENTAL SERVICE ASSISTANCE TEAMS - ZONE 2

1.8

LCM 10/9/92

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ManTech Environmental

ESAT Region 10
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MEMORANDUM

DATE: October 9, 1992

TO: Monica Rolluda, Site Assessment Manager, USEPA, Region 10
Isa Chamberlain, Task Monitor, USEPA, Region 10 *Review 10/20/92 @..*
Gerald Muth, RPO, USEPA, Region 10

THRU: Barry Pepich, ETM, ESAT, Region 10

FROM: John Alexander, Chemist, ESAT, Region 10 *jalexander*

SUBJ: Metals Analysis for Avery Railroad Dump and Roundhouse Soil
Samples 92352358 - 77

cc: Bruce Woods, QA Office, USEPA, Region 10
Kara Steward, URS Consultants, Seattle, WA

TID No.: 10-9209-205

Doc. No.: ESAT-10A-5516

The following is a quality assurance data review of the trace metal analysis for Avery Railroad Dump and Roundhouse Soil Samples 92352358-77. All analyses were performed at the Manchester Laboratory.

The project code for these samples is TEC-575A. The superfund account code is 2TFA10PUZZ.

Avery RR Dump & Roundhouse Soil/Sludge Samples
Trace Metals Analysis & Hg
TEC-575A, 92352358-77
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I. Timeliness

Samples 92352358-77 were collected on 8/25/92 and 8/26/92 and received on 8/28/92. Mercury analysis was performed on 9/04/92. The trace metals analysis was completed by 10/06/92.

Suggested holding times were not exceeded. Qualification was not necessary.

II. Sample Preparation

Samples were prepared on 9/11/92, 9/16/92, and 9/24/92 for ICP-AES and GFAA analysis using a microwave digestion, EPA Method 3051. Oily samples were inspected after initial digestion and heated for longer periods when necessary to break up any remaining residue. The sample appearance was classified in two general categories. One group was light in color containing mostly sandy-type particles. The other group was darker in color, ranging from moderate to very oily in appearance. The following is a table of the sample classification:

Light Color, 92352366, 92352367, 92352370, 92352371, 92352374, 92352376
sandy

Dark Color, 92352358, 92352359, 92352360, 92352361, 92352362, 92352363,
oily 92352364, 92352365, 92352368, 92352369, 92352372, 92352373,
92352375, 92352377

The samples were prepared for mercury analysis on 9/03/92 using Method EP1-245.5.

III. Calibration

The samples were analyzed by ICP-AES (Inductively Coupled Argon Plasma -Atomic Emission Spectroscopy) on 09/24/92, 10/04/92, 10/05/92 and 10/06/92. The instrument was standardized with a blank and a series of standards.

The samples were analyzed by GFAA (Graphite Furnace Atomic Absorption Spectroscopy) on 9/19/92 and 9/21/92. The instrument was calibrated each day with a blank and four standards. Correlation coefficients were all above the minimum value of 0.995.

The samples were analyzed by CVAA (Cold Vapor Atomic Absorption Spectroscopy) for mercury on 9/04/92. A blank and 6 standards were used to calibrate the analytical instrument. The curve was linear with a correlation coefficient of 0.999.

IV. Reference Control Samples

Control samples are required before and after sample analysis and after every 10 samples during analysis. The acceptance range for ICP-AES and GFAA analyses for each element is 90 - 110% of the known value in the control sample. The acceptance range for CVAA is 80 - 120%.

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All samples reported had verified reference control parameters within range on each day of analysis.

V. Blanks

Procedural blanks are prepared with each group of samples digested to detect possible introduction of contamination. If analytes are found in any of the associated procedural blanks the concentration in the samples must be at least ten times (10X) the quantity observed in the blank. If the sample result fails this criteria the sample result is qualified (B).

Sodium was found in the procedural blanks and the sample results failed to meet minimum criteria. Sodium results in all samples were qualified (B) denoting possible contamination.

All other analyte results exceeded minimum criteria and therefore no further qualification was necessary.

VI. ICP-AES Interference Check Sample

The interference check sample (ICS) is analyzed by ICP-AES to verify interelement and background correction factors. Analysis is required at the beginning and end of each analytical sequence. The acceptance criteria for the ICS is 80% - 120%.

All parameters were within limits on the analysis dates. No qualification was necessary.

VII. Matrix Spike Analysis

Matrix spike sample analyses are performed to provide information about the effect of the sample matrix on digestion and measurement methods. Matrix spike recoveries are required to be within 75% - 125% of the spike after digestion, analytical post spikes (spiked after digestion) are required to be within 85% - 115% of the spike.

Antimony exhibited low recoveries in all matrix spike samples. Post spike analysis was performed and recoveries were also low. This is typical for antimony and is due to the inefficiency of the digestion method. Antimony results were qualified (N) to notify the data user of poor spike performance.

Silver recoveries were acceptable in 92352358 MS/MSD (76.4%, 76.0%), were low in 92352361 MS/MSD (67.4%, 70.1%), and were mixed in 92352366 (79.8%, 67.3%). Post spike recoveries were only slightly below minimum criteria in 92352361 and 92352366 (82.6%, 82.8%). The results for silver in samples associated with 92352361 were qualified (N) to denote the low spike recoveries.

Thallium recoveries were low in all matrix spike samples therefore all sample results were qualified (N).

Mercury recoveries in sample 92352369 MS/MSD were low (53%, 62%). This

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was the only set of matrix spikes performed for these samples therefore all mercury results were qualified (N).

Selenium recoveries were low in 92352366 MS/MSD (70%, 70%) and therefore results in associated samples were qualified (N).

Lead exhibited poor matrix spike performance in 92352366 MS/MSD but this was due to a lack of homogeneity in the samples. This is explained in more detail in Section X.

The remaining spiked values were within the specified limits therefore no further qualification was necessary.

VIII. Furnace Atomic Absorption QC

A post spike is performed on each sample analyzed by GFAA to help determine if interferences are affecting the analyte signal. The post spike should fall within 85% to 115% of the expected value. If a post spike is outside the accepted limits, and the sample concentration is greater than 50% of the post spike added, the sample is analyzed by the Method of Standard Additions (MSA). When MSA is used to quantitate the sample result, the (S) qualifier is attached if the corresponding curve has a correlation coefficient greater than 0.995, a (+) qualifier is attached if the curve is less than 0.995. If a post spike is outside the accepted limits, and the sample concentration is less than 50% of the post spike added, the sample result is reported and a (W) qualifier is attached.

Post spike analysis was performed on all samples analyzed for selenium and thallium by GFAA. The selenium recoveries in samples 92352359, 92352366 DUP, and 92352374 were low. The thallium recovery in sample 92352363 DUP was low. The results for selenium and thallium in the specified samples were qualified (W) to denote the low post spike recoveries.

IX. ICP-AES Serial Dilution

All samples were diluted five-fold for serial dilution analysis. The analyte concentrations which exceeded 50 times the instrument detection limit in the original sample were qualified (E) if the dilution result did not compare within 10% of the original. The (E) indicates possible physical interferences may be present.

The following required qualification based on serial dilution criteria: calcium, zinc - 92352358; copper - 92352359; copper - 92352360; barium, vanadium, zinc - 92352361; copper - 92352366 DUP; calcium, iron, magnesium, manganese, vanadium, zinc - 92352374; calcium, lead, nickel, zinc - 92352375; calcium, zinc - 92352377.

X. Duplicate Analysis

Duplicate analysis of a sample is performed to determine the precision of the digestion and analytical methods. The results for each sample should compare within 20% relative difference.

Because of the oily nature of the matrix, it was difficult to obtain representative

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portions of these samples in all cases. The samples underwent drying, particle reduction, and sieving in order to produce the best homogeneous mix possible. In the case of most analytes, these extra procedures helped to produce results with good precision. Lead was the only analyte which demonstrated consistently poor precision and in one case, the relative percent difference between sample 92352366 and the duplicate was 140%. The data was not qualified under laboratory guidelines but the data user should make note of possible lack of precision in lead results.

XI. Detection Limits

Sample results which fall below the instrument detection limit (IDL) are reported at the instrument detection limit and qualified (U). Any sample result falling between the detection limit and the quantitation limit are qualified as an estimate (P). This was implemented to notify the data user that the element was detected, but not within the limits of precision of 10% relative standard deviation.

XII. Data Summary

The results for the Avery Soil samples analysis are of good quality despite the complex matrix of these samples. Results qualified (U) were not detected above the laboratory's instrument detection limit. Results qualified (P) were detected but below the laboratory's minimum quantitation limit. The remaining results were not qualified with the following exceptions:

Sodium results in all samples were qualified (B) denoting possible contamination.

Antimony, mercury, and thallium results were qualified (N) in all samples to notify the data user of poor spike performance.

Silver results in samples 92352360, 61-65, 68, 69, 72, 73, 75, and 77 were qualified (N) to denote the low spike recoveries.

Selenium results in samples 92352366, 67, 70, 71, 74, and 76 were qualified (N) due to low spike recoveries.

Selenium was qualified (W) in samples 92352359, 92352366 DUP, and 92352374 due to low post spike recoveries in GFAA analysis.

Thallium was qualified (W) in sample 92352363 DUP also due to low post spike recoveries in GFAA analysis.

The following required qualification, (E), based on serial dilution criteria: calcium, zinc - 92352358; copper - 92352359; copper - 92352360; barium, vanadium, zinc - 92352361; copper - 92352366 DUP; calcium, iron, magnesium, manganese, sodium, vanadium, zinc - 92352374; calcium, lead, nickel, zinc - 92352375; calcium, sodium, zinc - 92352377.

USEPA Region 10 Laboratory

Below are the definitions for the qualifiers used in the metals area when qualifying data from metals analysis.

DATA QUALIFIERS

- U** - Element was analyzed but not detected. The associated numerical value is the instrument detection limit/method detection limit.
- P** - The analyte was detected above the Instrument Detection Limit, but not quantified within expected limits of precision. The laboratory has established minimum quantitation limits having a relative standard deviation of no more than 10%
- E** - The reported value is an estimate because of the presence of interference. An explanatory note is included with the report.
- B** - Analyte is found in the analytical blank as well as the sample indicating possible/probable blank contamination. (B) accompanies those analytical results within 10 (10X) times the Instrument Detection Limit for the analyte of interest.
- N** - Spiked sample recovery not within control limits.
- NAR** - There is no analysis result for this analyte.
- NA** - Not Applicable/Not Required.
- S** - Sample was analyzed by method of standard additions.
- +** - Sample was analyzed by method of standard additions and the correlation coefficient was less than 0.995.
- *** - The analyte was present in the sample.
- W** - Post spike out of specified range, and sample was less than 50% the spike added.

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352358

Description: ORS01

Source: Sludge (Waste Pond)

Begin Date: 92/08/25 12:00

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352359

Description: ORS02

Source: Sludge (Waste Pond)

Begin Date: 92/08/25 12:00

Metals - Specified		Sediment		Metals - ICP Scan	Sediment		
	Result	Units		*** Continued ***			
		Duplicate #1					
Selenium	Se-Sedmt	0.21PW*	mg/kg-dr	Copper	Cu-Sedmt	120 *	mg/kg-dr
Thallium	Tl-Sedmt	0.25UN	mg/kg-dr	Lead	Pb-Sedmt	24.5 *	mg/kg-dr
Mercury	Hg-Sedmt	0.046N*	mg/kg-wt	Manganese	Mn-Sedmt	94.7 *	mg/kg-dr
				Nickel	Ni-Sedmt	13.1 *	mg/kg-dr
Metals - ICP Scan		Sediment		Silver	Ag-Sedmt	1.98 *	mg/kg-dr
		Result	Units	V	-Sedmt	24.1 *	mg/kg-dr
				Zinc	Zn-Sedmt	75.9 *	mg/kg-dr
Calcium	Ca-Sedmt	1300 *	mg/kg-dr	Antimony	Sb-Sedmt	3.2UN	mg/kg-dr
Mgnesium	Mg-Sedmt	3130 *	mg/kg-dr	Aluminum	Al-Sedmt	5470 *	mg/kg-dr
Sodium	Na-Sedmt	248B*	mg/kg-dr	Selenium	Se-Sedmt	NAR	mg/kg-dr
Potssium	K - Sedmt	816 *	mg/kg-dr	Iron	Fe-Sedmt	11400 *	mg/kg-dr
Arsenic	As-Sedmt	11.0P*	mg/kg-dr	Thallium	Tl-Sedmt	NAR	mg/kg-dr
Barium	Ba-Sedmt	30.7 *	mg/kg-dr				
Beryllium	Be-Sedmt	0.38P*	mg/kg-dr				
Cadmium	Cd-Sedmt	0.56P*	mg/kg-dr				
Chromium	Cr-Sedmt	6.18 *	mg/kg-dr				
Cobalt	Co-Sedmt	4.11 *	mg/kg-dr				
Copper	Cu-Sedmt	82.0E*	mg/kg-dr				
Lead	Pb-Sedmt	20.6 *	mg/kg-dr				
Mangnese	Mn-Sedmt	94.2 *	mg/kg-dr				
Nickel	Ni-Sedmt	15.3 *	mg/kg-dr				
Silver	Ag-Sedmt	2.13 *	mg/kg-dr				
Vanadium	V - Sedmt	23.0 *	mg/kg-dr				
Zinc	Zn-Sedmt	87.2 *	mg/kg-dr				
Antimony	Sb-Sedmt	2.9UN	mg/kg-dr				
Aluminum	Al-Sedmt	5520 *	mg/kg-dr				
Selenium	Se-Sedmt	NAR	mg/kg-dr				
Iron	Fe-Sedmt	12000 *	mg/kg-dr				
Thallium	Tl-Sedmt	NAR	mg/kg-dr				

Metals - ICP Scan		Sediment	
Duplicate #1		Result	Units
Calcium	Ca-Sedmt	1340 *	mg/kg-dr
Mgnesium	Mg-Sedmt	3200 *	mg/kg-dr
Sodium	Na-Sedmt	244B*	mg/kg-dr
Potssium	K - Sedmt	826 *	mg/kg-dr
Arsenic	As-Sedmt	11.0P*	mg/kg-dr
Barium	Ba-Sedmt	31.2 *	mg/kg-dr
Beryllium	Be-Sedmt	0.37P*	mg/kg-dr
Cadmium	Cd-Sedmt	0.22U	mg/kg-dr
Chromium	Cr-Sedmt	6.61 *	mg/kg-dr
Cobalt	Co-Sedmt	5.04 *	mg/kg-dr

(Sample Complete)

23-OCT-92
10:21:44

EPA Region X Lab Management System
Sample/Project Analysis Results

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Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352360

Description: SS001

Source: Sediment (General)

Begin Date: 92/08/25 12:30

Metals - Specified		Sediment	
		Result	Units
Selenium	Se-Sedmt	0.20U	mg/kg-dr
Thallium	Tl-Sedmt	0.25UN	mg/kg-dr
Mercury	Hg-Sedmt	0.02UN	mg/kg-wt

Metals - ICP Scan		Sediment	
		Result	Units
Calcium	Ca-Sedmt	1160 *	mg/kg-dr
Magnesium	Mg-Sedmt	45.30 *	mg/kg-dr
Sodium	Na-Sedmt	368B*	mg/kg-dr
Potassium	K - Sedmt	812 *	mg/kg-dr
Arsenic	As-Sedmt	23.0 *	mg/kg-dr
Barium	Ba-Sedmt	27.6 *	mg/kg-dr
Beryllium	Be-Sedmt	0.29P*	mg/kg-dr
Cadmium	Cd-Sedmt	0.28P*	mg/kg-dr
Chromium	Cr-Sedmt	7.22 *	mg/kg-dr
Cobalt	Co-Sedmt	9.60 *	mg/kg-dr
Copper	Cu-Sedmt	27.5E*	mg/kg-dr
Lead	Pb-Sedmt	25.4 *	mg/kg-dr
Manganese	Mn-Sedmt	203 *	mg/kg-dr
Nickel	Ni-Sedmt	12.7 *	mg/kg-dr
Silver	Ag-Sedmt	3.33N*	mg/kg-dr
Vanadium	V - Sedmt	14.8 *	mg/kg-dr
Zinc	Zn-Sedmt	47.9 *	mg/kg-dr
Antimony	Sb-Sedmt	2.9UN	mg/kg-dr
Aluminum	Al-Sedmt	7380 *	mg/kg-dr
Selenium	Se-Sedmt	NAR	mg/kg-dr
Iron	Fe-Sedmt	18800 *	mg/kg-dr
Thallium	Tl-Sedmt	NAR	mg/kg-dr

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352361

Description: SS002

Source: Sediment (General)

Begin Date: 92/08/25 11:00

Metals - Specified			Sediment			Metals - ICP Scan			Sediment			Metals - ICP Scan			Sediment		
	Result	Units					*** Continued ***			Result	Units		Duplicate #1		Result	Units	
Selenium	Se-Sedmt	0.20U	mg/kg-dr			Metals - ICP Scan			Sediment			Metals - ICP Scan			Sediment		
Thallium	Tl-Sedmt	0.25UN	mg/kg-dr	Copper	Cu-Sedmt	85.9	% Recov		Calcium	Ca-Sedmt	1380 *	mg/kg-dr					
Mercury	Hg-Sedmt	0.02UN	mg/kg-wt	Lead	Pb-Sedmt	78.5	% Recov		Magnesium	Mg-Sedmt	4370 *	mg/kg-dr					
				Manganese	Mn-Sedmt	83.3	% Recov		Sodium	Na-Sedmt	380B*	mg/kg-dr					
				Nickel	Ni-Sedmt	83.3	% Recov		Potassium	K -Sedmt	999 *	mg/kg-dr					
				Silver	Ag-Sedmt	67.4	% Recov		Arsenic	As-Sedmt	15.6 *	mg/kg-dr					
				Vanadium	V -Sedmt	84.7	% Recov		Barium	Ba-Sedmt	35.5 *	mg/kg-dr					
				Zinc	Zn-Sedmt	78.2	% Recov		Beryllium	Be-Sedmt	0.33P*	mg/kg-dr					
				Antimony	Sb-Sedmt	26.5	% Recov		Cadmium	Cd-Sedmt	0.21P*	mg/kg-dr					
Calcium	Ca-Sedmt	1340 *	mg/kg-dr	Aluminum	Al-Sedmt	NAR	% Recov		Chromium	Cr-Sedmt	7.61 *	mg/kg-dr					
Magnesium	Mg-Sedmt	4150 *	mg/kg-dr	Selenium	Se-Sedmt	NAR	% Recov		Cobalt	Co-Sedmt	5.45 *	mg/kg-dr					
Sodium	Na-Sedmt	393B*	mg/kg-dr	Iron	Fe-Sedmt	NAR	% Recov		Copper	Cu-Sedmt	49.2 *	mg/kg-dr					
Potassium	K -Sedmt	916 *	mg/kg-dr	Thallium	Tl-Sedmt	NAR	% Recov		Lead	Pb-Sedmt	32.7 *	mg/kg-dr					
Arsenic	As-Sedmt	17.2 *	mg/kg-dr						Manganese	Mn-Sedmt	170 *	mg/kg-dr					
Barium	Ba-Sedmt	33.8E*	mg/kg-dr						Nickel	Ni-Sedmt	13.1 *	mg/kg-dr					
Beryllium	Be-Sedmt	0.34P*	mg/kg-dr						Silver	Ag-Sedmt	3.11N*	mg/kg-dr					
Cadmium	Cd-Sedmt	0.20U	mg/kg-dr						Vanadium	V -Sedmt	18.6 *	mg/kg-dr					
Chromium	Cr-Sedmt	7.46 *	mg/kg-dr						Zinc	Zn-Sedmt	59.4 *	mg/kg-dr					
Cobalt	Co-Sedmt	5.95 *	mg/kg-dr						Antimony	Sb-Sedmt	3.1PN*	mg/kg-dr					
Copper	Cu-Sedmt	42.0 *	mg/kg-dr						Calcium	Ca-Sedmt	NAR	mg/kg					
Lead	Pb-Sedmt	36.5 *	mg/kg-dr						Magnesium	Mg-Sedmt	NAR	mg/kg					
Manganese	Mn-Sedmt	167 *	mg/kg-dr						Sodium	Na-Sedmt	NAR	mg/kg					
Nickel	Ni-Sedmt	12.0 *	mg/kg-dr						Potassium	K -Sedmt	NAR	mg/kg					
Silver	Ag-Sedmt	3.02N*	mg/kg-dr						Arsenic	As-Sedmt	79.7	mg/kg					
Vanadium	V -Sedmt	18.4E*	mg/kg-dr						Barium	Ba-Sedmt	93.2	mg/kg					
Zinc	Zn-Sedmt	52.1E*	mg/kg-dr						Beryllium	Be-Sedmt	103.6	mg/kg					
Antimony	Sb-Sedmt	3.0UN	mg/kg-dr						Cadmium	Cd-Sedmt	77.6	mg/kg					
Aluminum	Al-Sedmt	6440 *	mg/kg-dr						Chromium	Cr-Sedmt	85.0	mg/kg					
Selenium	Se-Sedmt	NAR	mg/kg-dr						Cobalt	Co-Sedmt	85.2	mg/kg					
Iron	Fe-Sedmt	16300 *	mg/kg-dr						Copper	Cu-Sedmt	97.6	mg/kg					
Thallium	Tl-Sedmt	NAR	mg/kg-dr						Lead	Pb-Sedmt	80.4	mg/kg					
									Manganese	Mn-Sedmt	99.1	mg/kg					
									Nickel	Ni-Sedmt	84.3	mg/kg					
									Silver	Ag-Sedmt	70.1	mg/kg					
									Vanadium	V -Sedmt	83.8	mg/kg					
									Zinc	Zn-Sedmt	78.1	mg/kg					
Calcium	Ca-Sedmt	NAR	% Recov						Antimony	Sb-Sedmt	29.5	mg/kg					
Magnesium	Mg-Sedmt	NAR	% Recov						Aluminum	Al-Sedmt	NAR	mg/kg					
Sodium	Na-Sedmt	NAR	% Recov						Selenium	Se-Sedmt	NAR	mg/kg					
Potassium	K -Sedmt	NAR	% Recov						Iron	Fe-Sedmt	NAR	mg/kg					
Arsenic	As-Sedmt	80.0	% Recov						Thallium	Tl-Sedmt	NAR	mg/kg					
Barium	Ba-Sedmt	92.5	% Recov														
Beryllium	Be-Sedmt	103.5	% Recov														
Cadmium	Cd-Sedmt	76.9	% Recov														
Chromium	Cr-Sedmt	86.3	% Recov														
Cobalt	Co-Sedmt	85.3	% Recov														

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352362

Description: SS003

Source: Sediment (General)

Begin Date: 92/08/25 10:25

Metals - Specified		Sediment	
		Result	Units
Selenium	Se-Sedmt	0.20U	mg/kg-dr
Thallium	Tl-Sedmt	0.25UN	mg/kg-dr
Mercury	Hg-Sedmt	0.02UN	mg/kg-wt

Metals - ICP Scan		Sediment	
		Result	Units
Calcium	Ca-Sedmt	1470 *	mg/kg-dr
Magnesium	Mg-Sedmt	3590 *	mg/kg-dr
Sodium	Na-Sedmt	371B*	mg/kg-dr
Potassium	K -Sedmt	849 *	mg/kg-dr
Arsenic	As-Sedmt	11.0P*	mg/kg-dr
Barium	Ba-Sedmt	31.3 *	mg/kg-dr
Beryllium	Be-Sedmt	0.26P*	mg/kg-dr
Cadmium	Cd-Sedmt	0.20U	mg/kg-dr
Chromium	Cr-Sedmt	6.39 *	mg/kg-dr
Cobalt	Co-Sedmt	6.08 *	mg/kg-dr
Copper	Cu-Sedmt	17.0 *	mg/kg-dr
Lead	Pb-Sedmt	9.2P*	mg/kg-dr
Manganese	Mn-Sedmt	264 *	mg/kg-dr
Nickel	Ni-Sedmt	8.45 *	mg/kg-dr
Silver	Ag-Sedmt	2.50N*	mg/kg-dr
Vanadium	V -Sedmt	11.5 *	mg/kg-dr
Zinc	Zn-Sedmt	40.2 *	mg/kg-dr
Antimony	Sb-Sedmt	3.0UN	mg/kg-dr
Aluminum	Al-Sedmt	5840 *	mg/kg-dr
Selenium	Se-Sedmt	NAR	mg/kg-dr
Iron	Fe-Sedmt	13200 *	mg/kg-dr
Thallium	Tl-Sedmt	NAR	mg/kg-dr

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352363

Description: SS004

Source: Sediment (General)

Begin Date: 92/08/25 11:30

Metals - Specified			Sediment			Metals - ICP Scan			Sediment		
	Result	Units					*** Continued ***				
Selenium	Se-Sedmt	0.20U	mg/kg-dr	Zinc	Zn-Sedmt	63.9 *	mg/kg-dr				
Thallium	Tl-Sedmt	0.25UN	mg/kg-dr	Antimony	Sb-Sedmt	3.0UN	mg/kg-dr				
Mercury	Hg-Sedmt	0.023N*	mg/kg-wt	Aluminum	Al-Sedmt	6340 *	mg/kg-dr				
				Selenium	Se-Sedmt	NAR	mg/kg-dr				
Metals - Specified			Sediment			Iron	Fe-Sedmt	17900 *	mg/kg-dr		
Matrix Spike #1			Result Units			Thallium	Tl-Sedmt	NAR	mg/kg-dr		
Selenium	Se-Sedmt	83.4	% Recov								
Thallium	Tl-Sedmt	73.0	% Recov	Metals - ICP Scan			Sediment				
				Duplicate #1			Duplicate #1	Result	Units		
Selenium	Se-Sedmt	83.2	% Recov	Calcium	Ca-Sedmt	1660 *	mg/kg-dr				
Thallium	Tl-Sedmt	73.4	% Recov	Magnesium	Mg-Sedmt	3910 *	mg/kg-dr				
				Sodium	Na-Sedmt	535B*	mg/kg-dr				
Selenium	Se-Sedmt	83.2	% Recov	Potassium	K -Sedmt	902 *	mg/kg-dr				
Thallium	Tl-Sedmt	73.4	% Recov	Arsenic	As-Sedmt	23.1 *	mg/kg-dr				
				Barium	Ba-Sedmt	36.0 *	mg/kg-dr				
Selenium	Se-Sedmt	0.20U	mg/kg-dr	Beryllium	Be-Sedmt	0.34P*	mg/kg-dr				
Thallium	Tl-Sedmt	0.25UNW	mg/kg-dr	Cadmium	Cd-Sedmt	0.43P*	mg/kg-dr				
				Chromium	Cr-Sedmt	8.66 *	mg/kg-dr				
Metals - ICP Scan	Sediment			Cobalt	Co-Sedmt	5.90 *	mg/kg-dr				
	Result	Units		Copper	Cu-Sedmt	127 *	mg/kg-dr				
Calcium	Ca-Sedmt	1800 *	mg/kg-dr	Lead	Pb-Sedmt	104 *	mg/kg-dr				
Magnesium	Mg-Sedmt	4010 *	mg/kg-dr	Manganese	Mn-Sedmt	162 *	mg/kg-dr				
Sodium	Na-Sedmt	422B*	mg/kg-dr	Nickel	Ni-Sedmt	15.3 *	mg/kg-dr				
Potassium	K -Sedmt	792 *	mg/kg-dr	Silver	Ag-Sedmt	3.49N*	mg/kg-dr				
Arsenic	As-Sedmt	24.1 *	mg/kg-dr	Vanadium	V -Sedmt	24.7 *	mg/kg-dr				
Barium	Ba-Sedmt	36.7 *	mg/kg-dr	Zinc	Zn-Sedmt	75.1 *	mg/kg-dr				
Beryllium	Be-Sedmt	0.35P*	mg/kg-dr	Antimony	Sb-Sedmt	3.0UN	mg/kg-dr				
Cadmium	Cd-Sedmt	0.38P*	mg/kg-dr	Aluminum	Al-Sedmt	6110 *	mg/kg-dr				
Chromium	Cr-Sedmt	8.62 *	mg/kg-dr	Selenium	Se-Sedmt	NAR	mg/kg-dr				
Cobalt	Co-Sedmt	6.03 *	mg/kg-dr	Iron	Fe-Sedmt	19000 *	mg/kg-dr				
Copper	Cu-Sedmt	107 *	mg/kg-dr	Thallium	Tl-Sedmt	NAR	mg/kg-dr				
Lead	Pb-Sedmt	165 *	mg/kg-dr								
Manganese	Mn-Sedmt	164 *	mg/kg-dr								
Nickel	Ni-Sedmt	15.2 *	mg/kg-dr								
Silver	Ag-Sedmt	3.36N*	mg/kg-dr								
Vanadium	V -Sedmt	25.5 *	mg/kg-dr								

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352364

Description: SS01-1

Source: Sediment (General)

Begin Date: 92/08/26 11:10

Metals - Specified		Sediment	
		Result	Units
Selenium	Se-Sedmt	0.20U	mg/kg-dr
Thallium	Tl-Sedmt	0.25UN	mg/kg-dr
Mercury	Hg-Sedmt	0.065N*	mg/kg-wt

Metals - ICP Scan		Sediment	
		Result	Units
Calcium	Ca-Sedmt	4220 *	mg/kg-dr
Magnesium	Mg-Sedmt	2720 *	mg/kg-dr
Sodium	Na-Sedmt	666B*	mg/kg-dr
Potassium	K -Sedmt	948 *	mg/kg-dr
Arsenic	As-Sedmt	18.5 *	mg/kg-dr
Barium	Ba-Sedmt	145 *	mg/kg-dr
Beryllium	Be-Sedmt	0.46P*	mg/kg-dr
Cadmium	Cd-Sedmt	1.58 *	mg/kg-dr
Chromium	Cr-Sedmt	16.1 *	mg/kg-dr
Cobalt	Co-Sedmt	5.97 *	mg/kg-dr
Copper	Cu-Sedmt	180 *	mg/kg-dr
Lead	Pb-Sedmt	235 *	mg/kg-dr
Manganese	Mn-Sedmt	326 *	mg/kg-dr
Nickel	Ni-Sedmt	16.6 *	mg/kg-dr
Silver	Ag-Sedmt	5.02N*	mg/kg-dr
Vanadium	V -Sedmt	21.5 *	mg/kg-dr
Zinc	Zn-Sedmt	187 *	mg/kg-dr
Antimony	Sb-Sedmt	3.0UN	mg/kg-dr
Aluminum	Al-Sedmt	5500 *	mg/kg-dr
Selenium	Se-Sedmt	NAR	mg/kg-dr
Iron	Fe-Sedmt	20200 *	mg/kg-dr
Thallium	Tl-Sedmt	NAR	mg/kg-dr

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352365

Description: SS01-2

Source: Sediment (General)

Begin Date: 92/08/26 11:10

Metals - Specified		Sediment
		Result Units
Selenium	Se-Sedmt	0.20U mg/kg-dr
Thallium	Tl-Sedmt	0.25UN mg/kg-dr
Mercury	Hg-Sedmt	0.12N* mg/kg-wt

Metals - ICP Scan		Sediment
		Result Units
Calcium	Ca-Sedmt	3250 * mg/kg-dr
Magnesium	Mg-Sedmt	2580 * mg/kg-dr
Sodium	Na-Sedmt	559B* mg/kg-dr
Potassium	K -Sedmt	437 * mg/kg-dr
Arsenic	As-Sedmt	10.0P* mg/kg-dr
Barium	Ba-Sedmt	148 * mg/kg-dr
Beryllium	Be-Sedmt	0.43P* mg/kg-dr
Cadmium	Cd-Sedmt	0.39P* mg/kg-dr
Chromium	Cr-Sedmt	11.8 * mg/kg-dr
Cobalt	Co-Sedmt	4.74 * mg/kg-dr
Copper	Cu-Sedmt	225 * mg/kg-dr
Lead	Pb-Sedmt	211 * mg/kg-dr
Manganese	Mn-Sedmt	264 * mg/kg-dr
Nickel	Ni-Sedmt	15.9 * mg/kg-dr
Silver	Ag-Sedmt	3.53N* mg/kg-dr
Vanadium	V -Sedmt	20.4 * mg/kg-dr
Zinc	Zn-Sedmt	65.8 * mg/kg-dr
Antimony	Sb-Sedmt	3.0UN mg/kg-dr
Aluminum	Al-Sedmt	4180 * mg/kg-dr
Selenium	Se-Sedmt	NAR mg/kg-dr
Iron	Fe-Sedmt	18700 * mg/kg-dr
Thallium	Tl-Sedmt	NAR mg/kg-dr

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA1OPUZZ

Laboratory: EPA, Manchester

Sample No: 92 352366

Description: SS02-1

Source: Sediment (General)

Begin Date: 92/08/26 11:35

Metals - Specified		Sediment	Result	Units	Metals - ICP Scan	Sediment	Result	Units	Metals - ICP Scan	Sediment	Result	Units
					*** Continued ***				*** Continued ***			
Selenium	Se-Sedmt	0.20UN	mg/kg-dr		Zinc	Zn-Sedmt	24.6 *	mg/kg-dr	Beryllium	Be-Sedmt	106.0	% Recov
Thallium	Tl-Sedmt	0.25UN	mg/kg-dr		Antimony	Sb-Sedmt	3.0UN	mg/kg-dr	Cadmium	Cd-Sedmt	77.7	% Recov
Mercury	Hg-Sedmt	0.02UN	mg/kg-wt		Aluminum	Al-Sedmt	14700 *	mg/kg-dr	Chromium	Cr-Sedmt	80.4	% Recov
Metals - Specified		Sediment	Result	Units	Selenium	Se-Sedmt	NAR	mg/kg-dr	Cobalt	Co-Sedmt	85.1	% Recov
Matrix Spike #1					Iron	Fe-Sedmt	22900 *	mg/kg-dr	Copper	Cu-Sedmt	86.9	% Recov
					Thallium	Tl-Sedmt	NAR	mg/kg-dr	Lead	Pb-Sedmt	-240.6	% Recov
Selenium	Se-Sedmt	69.6	% Recov		Metals - ICP Scan		Sediment		Nickel	Ni-Sedmt	81.9	% Recov
Thallium	Tl-Sedmt	68.8	% Recov		Matrix Spike #1		Result		Silver	Ag-Sedmt	67.3	% Recov
Metals - Specified		Sediment	Result	Units	Calcium	Ca-Sedmt	NAR	% Recov	Aluminum	Al-Sedmt	NAR	% Recov
Matrix Spike #2					Mgnesium	Mg-Sedmt	NAR	% Recov	Selenium	Se-Sedmt	NAR	% Recov
Selenium	Se-Sedmt	69.6	% Recov		Sodium	Na-Sedmt	NAR	% Recov	Iron	Fe-Sedmt	NAR	% Recov
Thallium	Tl-Sedmt	68.4	% Recov		Potssium	K -Sedmt	NAR	% Recov	Thallium	Tl-Sedmt	NAR	% Recov
Metals - Specified		Sediment	Result	Units	Arsenic	As-Sedmt	91.9	% Recov	Metals - ICP Scan		Sediment	
Duplicate #1					Barium	Ba-Sedmt	104.0	% Recov	Matrix Spike #1		Result	
Selenium	Se-Sedmt	0.20UW	mg/kg-dr		Beryllium	Be-Sedmt	119.3	% Recov	Metals - ICP Scan		Sediment	
Thallium	Tl-Sedmt	0.25UN	mg/kg-dr		Cadmium	Cd-Sedmt	90.4	% Recov	Duplicate #1		Result	
Metals - ICP Scan		Sediment	Result	Units	Chromium	Cr-Sedmt	98.2	% Recov	Metals - ICP Scan		Sediment	
					Cobalt	Co-Sedmt	96.8	% Recov	Duplicate #1		Result	
Selenium	Se-Sedmt	2910 *	mg/kg-dr		Copper	Cu-Sedmt	101.9	% Recov	Calcium	Ca-Sedmt	2660 *	mg/kg-dr
Thallium	Tl-Sedmt	12600 *	mg/kg-dr		Lead	Pb-Sedmt	-184.1	% Recov	Mgnesium	Mg-Sedmt	12500 *	mg/kg-dr
Metals - ICP Scan		Sediment	Result	Units	Mangnese	Mn-Sedmt	111.5	% Recov	Sodium	Na-Sedmt	368B*	mg/kg-dr
					Nickel	Ni-Sedmt	93.6	% Recov	Potssium	K -Sedmt	2560 *	mg/kg-dr
Calcium	Ca-Sedmt	401B*	mg/kg-dr		Silver	Ag-Sedmt	79.8	% Recov	Arsenic	As-Sedmt	31.9 *	mg/kg-dr
Mgnesium	Mg-Sedmt	2740 *	mg/kg-dr		Vanadium	V -Sedmt	99.4	% Recov	Barium	Ba-Sedmt	71.7 *	mg/kg-dr
Sodium	Na-Sedmt	36.4 *	mg/kg-dr		Zinc	Zn-Sedmt	86.6	% Recov	Beryllium	Be-Sedmt	0.792 *	mg/kg-dr
Potssium	K -Sedmt	76.3 *	mg/kg-dr		Antimony	Sb-Sedmt	14.4	% Recov	Cadmium	Cd-Sedmt	0.44P*	mg/kg-dr
Arsenic	As-Sedmt	0.836 *	mg/kg-dr		Aluminum	Al-Sedmt	NAR	% Recov	Chromium	Cr-Sedmt	11.9 *	mg/kg-dr
Barium	Ba-Sedmt	0.32P*	mg/kg-dr		Selenium	Se-Sedmt	NAR	% Recov	Cobalt	Co-Sedmt	8.96 *	mg/kg-dr
Beryllium	Be-Sedmt	0.92 *	mg/kg-dr		Iron	Fe-Sedmt	NAR	% Recov	Copper	Cu-Sedmt	16.2E*	mg/kg-dr
Cadmium	Cd-Sedmt	17.8 *	mg/kg-dr		Thallium	Tl-Sedmt	NAR	% Recov	Lead	Pb-Sedmt	70.3 *	mg/kg-dr
Chromium	Cr-Sedmt	653 *	mg/kg-dr		Metals - ICP Scan		Sediment		Mangnese	Mn-Sedmt	578 *	mg/kg-dr
Cobalt	Co-Sedmt	15.1 *	mg/kg-dr		Matrix Spike #2		Result		Nickel	Ni-Sedmt	13.7 *	mg/kg-dr
Copper	Cu-Sedmt	4.33 *	mg/kg-dr		Metals - ICP Scan		Sediment		Silver	Ag-Sedmt	3.99 *	mg/kg-dr
Lead	Pb-Sedmt	19.8 *	mg/kg-dr		Matrix Spike #2		Result		Vanadium	V -Sedmt	19.2 *	mg/kg-dr
Mangnese	Mn-Sedmt	394 *	mg/kg-dr		Metals - ICP Scan		Sediment		Zinc	Zn-Sedmt	20.7 *	mg/kg-dr
Nickel	Ni-Sedmt	6.53 *	mg/kg-dr		Matrix Spike #2		Result		Antimony	Sb-Sedmt	3.1UN	mg/kg-dr
Silver	Ag-Sedmt	1.51 *	mg/kg-dr		Metals - ICP Scan		Sediment		Cadmium	Cd-Sedmt	14300 *	mg/kg-dr
Vanadium	V -Sedmt	4.33 *	mg/kg-dr		Matrix Spike #2		Result		Chromium	Cr-Sedmt	NAR	mg/kg-dr

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352367

Description: SS02-2

Source: Sediment (General)

Begin Date: 92/08/26 11:35

Metals - Specified		Sediment	
		Result	Units
Selenium	Se-Sedmt	0.20UN	mg/kg-dr
Thallium	Tl-Sedmt	0.25UN	mg/kg-dr
Mercury	Hg-Sedmt	0.02UN	mg/kg-wt

Metals - ICP Scan		Sediment		
		Result	Units	
Calcium	Ca-Sedmt	2070	*	mg/kg-dr
Magnesium	Mg-Sedmt	5260	*	mg/kg-dr
Sodium	Na-Sedmt	451B*	mg/kg-dr	
Potassium	K -Sedmt	1370	*	mg/kg-dr
Arsenic	As-Sedmt	68.8	*	mg/kg-dr
Barium	Ba-Sedmt	42.8	*	mg/kg-dr
Beryllium	Be-Sedmt	0.502	*	mg/kg-dr
Cadmium	Cd-Sedmt	0.33P*	mg/kg-dr	
Chromium	Cr-Sedmt	10.5	*	mg/kg-dr
Cobalt	Co-Sedmt	9.63	*	mg/kg-dr
Copper	Cu-Sedmt	15.1	*	mg/kg-dr
Lead	Pb-Sedmt	25.8	*	mg/kg-dr
Manganese	Mn-Sedmt	323	*	mg/kg-dr
Nickel	Ni-Sedmt	12.2	*	mg/kg-dr
Silver	Ag-Sedmt	3.67	*	mg/kg-dr
Vanadium	V -Sedmt	13.3	*	mg/kg-dr
Zinc	Zn-Sedmt	15.9	*	mg/kg-dr
Antimony	Sb-Sedmt	3.0UN	mg/kg-dr	
Aluminum	Al-Sedmt	8420	*	mg/kg-dr
Selenium	Se-Sedmt	NAR	mg/kg-dr	
Iron	Fe-Sedmt	20300	*	mg/kg-dr
Thallium	Tl-Sedmt	NAR	mg/kg-dr	

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352368

Description: SS03-1

Source: Sediment (General)

Begin Date: 92/08/26 11:45

Metals - Specified		Sediment
		Result Units
Selenium	Se-Sedmt	0.20U mg/kg-dr
Thallium	Tl-Sedmt	0.25UN mg/kg-dr
Mercury	Hg-Sedmt	0.02UN mg/kg-wt

Metals - ICP Scan		Sediment
		Result Units
Calcium	Ca-Sedmt	2520 * mg/kg-dr
Magnesium	Mg-Sedmt	2680 * mg/kg-dr
Sodium	Na-Sedmt	538B* mg/kg-dr
Potassium	K -Sedmt	601 * mg/kg-dr
Arsenic	As-Sedmt	9.6P* mg/kg-dr
Barium	Ba-Sedmt	68.7 * mg/kg-dr
Beryllium	Be-Sedmt	0.28P* mg/kg-dr
Cadmium	Cd-Sedmt	0.71P* mg/kg-dr
Chromium	Cr-Sedmt	10.6 * mg/kg-dr
Cobalt	Co-Sedmt	4.90 * mg/kg-dr
Copper	Cu-Sedmt	76.6 * mg/kg-dr
Lead	Pb-Sedmt	87.5 * mg/kg-dr
Manganese	Mn-Sedmt	163 * mg/kg-dr
Nickel	Ni-Sedmt	15.1 * mg/kg-dr
Silver	Ag-Sedmt	2.25N* mg/kg-dr
Vanadium	V -Sedmt	18.8 * mg/kg-dr
Zinc	Zn-Sedmt	100 * mg/kg-dr
Antimony	Sb-Sedmt	3.0UN mg/kg-dr
Aluminum	Al-Sedmt	5060 * mg/kg-dr
Selenium	Se-Sedmt	NAR mg/kg-dr
Iron	Fe-Sedmt	12500 * mg/kg-dr
Thallium	Tl-Sedmt	NAR mg/kg-dr

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352369

Description: SS03-2

Source: Sediment (General)

Begin Date: 92/08/26 11:45

Metals - Specified		Sediment		Metals - ICP Scan	Sediment	
		Result	Units	*** Continued ***		
Selenium	Se-Sedmt	0.20U	mg/kg-dr	Selenium	Se-Sedmt	NAR mg/kg-dr
Thallium	Tl-Sedmt	0.25UN	mg/kg-dr	Iron	Fe-Sedmt	8210 * mg/kg-dr
Mercury	Hg-Sedmt	0.02UN	mg/kg-wt	Thallium	Tl-Sedmt	NAR mg/kg-dr
Metals - Specified		Sediment				
Matrix Spike #1		Result	Units			
Mercury	Hg-Sedmt	53	% Recov			
Metals - Specified		Sediment				
Matrix Spike #2		Result	Units			
Mercury	Hg-Sedmt	62	% Recov			
Metals - Specified		Sediment				
Duplicate #1		Result	Units			
Mercury	Hg-Sedmt	0.02UN	mg/kg-wt			
Metals - ICP Scan		Sediment				
		Result	Units			
Calcium	Ca-Sedmt	1460 *	mg/kg-dr			
Magnesium	Mg-Sedmt	2070 *	mg/kg-dr			
Sodium	Na-Sedmt	430B*	mg/kg-dr			
Potassium	K -Sedmt	240 *	mg/kg-dr			
Arsenic	As-Sedmt	5.3P*	mg/kg-dr			
Barium	Ba-Sedmt	21.0 *	mg/kg-dr			
Beryllium	Be-Sedmt	0.37P*	mg/kg-dr			
Cadmium	Cd-Sedmt	0.33P*	mg/kg-dr			
Chromium	Cr-Sedmt	8.77 *	mg/kg-dr			
Cobalt	Co-Sedmt	4.79 *	mg/kg-dr			
Copper	Cu-Sedmt	43.6 *	mg/kg-dr			
Lead	Pb-Sedmt	31.0 *	mg/kg-dr			
Manganese	Mn-Sedmt	96.0 *	mg/kg-dr			
Nickel	Ni-Sedmt	16.9 *	mg/kg-dr			
Silver	Ag-Sedmt	1.35N*	mg/kg-dr			
Vanadium	V -Sedmt	46.2 *	mg/kg-dr			
Zinc	Zn-Sedmt	41.9 *	mg/kg-dr			
Antimony	Sb-Sedmt	2.9UN	mg/kg-dr			
Aluminum	Al-Sedmt	3880 *	mg/kg-dr			

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352370

Description: SS04-1

Source: Sediment (General)

Begin Date: 92/08/26 12:00

Metals - Specified		Sediment
		Result Units
Selenium	Se-Sedmt	0.20UN mg/kg-dr
Thallium	Tl-Sedmt	0.25UN mg/kg-dr
Mercury	Hg-Sedmt	0.021N* mg/kg-wt

Metals - ICP Scan		Sediment
		Result Units
Calcium	Ca-Sedmt	4920 * mg/kg-dr
Magnesium	Mg-Sedmt	4680 * mg/kg-dr
Sodium	Na-Sedmt	616B* mg/kg-dr
Potassium	K -Sedmt	1710 * mg/kg-dr
Arsenic	As-Sedmt	21.1 * mg/kg-dr
Barium	Ba-Sedmt	91.9 * mg/kg-dr
Beryllium	Be-Sedmt	0.42P* mg/kg-dr
Cadmium	Cd-Sedmt	1.5P* mg/kg-dr
Chromium	Cr-Sedmt	15.3 * mg/kg-dr
Cobalt	Co-Sedmt	8.22 * mg/kg-dr
Copper	Cu-Sedmt	56.0 * mg/kg-dr
Lead	Pb-Sedmt	60.6 * mg/kg-dr
Manganese	Mn-Sedmt	322 * mg/kg-dr
Nickel	Ni-Sedmt	13.8 * mg/kg-dr
Silver	Ag-Sedmt	3.28 * mg/kg-dr
Vanadium	V -Sedmt	16.2 * mg/kg-dr
Zinc	Zn-Sedmt	196 * mg/kg-dr
Antimony	Sb-Sedmt	3.7UN mg/kg-dr
Aluminum	Al-Sedmt	7710 * mg/kg-dr
Selenium	Se-Sedmt	NAR mg/kg-dr
Iron	Fe-Sedmt	17600 * mg/kg-dr
Thallium	Tl-Sedmt	NAR mg/kg-dr

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352371

Description: SS04-2

Source: Sediment (General)

Begin Date: 92/08/26 12:00

Metals - Specified		Sediment
		Result Units
Selenium	Se-Sedmt	0.20UN mg/kg-dr
Thallium	Tl-Sedmt	0.25UN mg/kg-dr
Mercury	Hg-Sedmt	0.040N* mg/kg-wt

Metals - ICP Scan		Sediment
		Result Units
Calcium	Ca-Sedmt	4420 * mg/kg-dr
Magnesium	Mg-Sedmt	6410 * mg/kg-dr
Sodium	Na-Sedmt	665B* mg/kg-dr
Potassium	K -Sedmt	2490 * mg/kg-dr
Arsenic	As-Sedmt	40.7 * mg/kg-dr
Barium	Ba-Sedmt	137 * mg/kg-dr
Beryllium	Be-Sedmt	0.572 * mg/kg-dr
Cadmium	Cd-Sedmt	0.49P* mg/kg-dr
Chromium	Cr-Sedmt	10.3 * mg/kg-dr
Cobalt	Co-Sedmt	9.21 * mg/kg-dr
Copper	Cu-Sedmt	34.8 * mg/kg-dr
Lead	Pb-Sedmt	47.8 * mg/kg-dr
Manganese	Mn-Sedmt	502 * mg/kg-dr
Nickel	Ni-Sedmt	13.7 * mg/kg-dr
Silver	Ag-Sedmt	3.60 * mg/kg-dr
Vanadium	V -Sedmt	15.3 * mg/kg-dr
Zinc	Zn-Sedmt	97.8 * mg/kg-dr
Antimony	Sb-Sedmt	3.0UN mg/kg-dr
Aluminum	Al-Sedmt	12500 * mg/kg-dr
Selenium	Se-Sedmt	NAR mg/kg-dr
Iron	Fe-Sedmt	19600 * mg/kg-dr
Thallium	Tl-Sedmt	NAR mg/kg-dr

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352372

Description: SS05-1

Source: Sediment (General)

Begin Date: 92/08/26 12:10

Metals - Specified		Sediment	
		Result	Units
Selenium	Se-Sedmt	0.20U	mg/kg-dr
Thallium	Tl-Sedmt	0.25UN	mg/kg-dr
Mercury	Hg-Sedmt	0.02UN	mg/kg-wt

Metals - ICP Scan		Sediment	
		Result	Units
Calcium	Ca-Sedmt	2970 *	mg/kg-dr
Magnesium	Mg-Sedmt	5890 *	mg/kg-dr
Sodium	Na-Sedmt	603B*	mg/kg-dr
Potassium	K -Sedmt	2810 *	mg/kg-dr
Arsenic	As-Sedmt	29.7 *	mg/kg-dr
Barium	Ba-Sedmt	98.4 *	mg/kg-dr
Beryllium	Be-Sedmt	0.560 *	mg/kg-dr
Cadmium	Cd-Sedmt	0.35P*	mg/kg-dr
Chromium	Cr-Sedmt	10.5 *	mg/kg-dr
Cobalt	Co-Sedmt	10.2 *	mg/kg-dr
Copper	Cu-Sedmt	34.4 *	mg/kg-dr
Lead	Pb-Sedmt	29.2 *	mg/kg-dr
Manganese	Mn-Sedmt	491 *	mg/kg-dr
Nickel	Ni-Sedmt	16.0 *	mg/kg-dr
Silver	Ag-Sedmt	4.40N*	mg/kg-dr
Vanadium	V -Sedmt	18.2 *	mg/kg-dr
Zinc	Zn-Sedmt	50.0 *	mg/kg-dr
Antimony	Sb-Sedmt	3.0UN	mg/kg-dr
Aluminum	Al-Sedmt	12700 *	mg/kg-dr
Selenium	Se-Sedmt	NAR	mg/kg-dr
Iron	Fe-Sedmt	24000 *	mg/kg-dr
Thallium	Tl-Sedmt	NAR	mg/kg-dr

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352373

Description: SS05-2

Source: Sediment (General)

Begin Date: 92/08/26 12:10

Metals - Specified		Sediment
		Result Units
Selenium	Se-Sedmt	0.20U mg/kg-dr
Thallium	Tl-Sedmt	0.25UN mg/kg-dr
Mercury	Hg-Sedmt	0.037N* mg/kg-wt

Metals - ICP Scan		Sediment
		Result Units
Calcium	Ca-Sedmt	5400 * mg/kg-dr
Magnesium	Mg-Sedmt	3590 * mg/kg-dr
Sodium	Na-Sedmt	657B* mg/kg-dr
Potassium	K -Sedmt	1150 * mg/kg-dr
Arsenic	As-Sedmt	46.5 * mg/kg-dr
Barium	Ba-Sedmt	247 * mg/kg-dr
Beryllium	Be-Sedmt	0.859 * mg/kg-dr
Cadmium	Cd-Sedmt	0.58P* mg/kg-dr
Chromium	Cr-Sedmt	7.94 * mg/kg-dr
Cobalt	Co-Sedmt	8.17 * mg/kg-dr
Copper	Cu-Sedmt	123 * mg/kg-dr
Lead	Pb-Sedmt	225 * mg/kg-dr
Manganese	Mn-Sedmt	401 * mg/kg-dr
Nickel	Ni-Sedmt	23.3 * mg/kg-dr
Silver	Ag-Sedmt	3.17N* mg/kg-dr
Vanadium	V -Sedmt	33.6 * mg/kg-dr
Zinc	Zn-Sedmt	78.4 * mg/kg-dr
Antimony	Sb-Sedmt	3.0UN mg/kg-dr
Aluminum	Al-Sedmt	7390 * mg/kg-dr
Selenium	Se-Sedmt	NAR mg/kg-dr
Iron	Fe-Sedmt	17800 * mg/kg-dr
Thallium	Tl-Sedmt	NAR mg/kg-dr

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352374

Description: SS06-1

Source: Sediment (General)

Begin Date: 92/08/26 12:30

Metals - Specified		Sediment	
		Result	Units
Selenium	Se-Sedmt	0.20UNW	mg/kg-dr
Thallium	Tl-Sedmt	0.25UN	mg/kg-dr
Mercury	Hg-Sedmt	0.02UN	mg/kg-wt

Metals - ICP Scan		Sediment	
		Result	Units
Calcium	Ca-Sedmt	10800E*	mg/kg-dr
Magnesium	Mg-Sedmt	11000E*	mg/kg-dr
Sodium	Na-Sedmt	468B*	mg/kg-dr
Potassium	K -Sedmt	4800 *	mg/kg-dr
Arsenic	As-Sedmt	39.6 *	mg/kg-dr
Barium	Ba-Sedmt	83.3 *	mg/kg-dr
Beryllium	Be-Sedmt	0.795 *	mg/kg-dr
Cadmium	Cd-Sedmt	0.58P*	mg/kg-dr
Chromium	Cr-Sedmt	15.7 *	mg/kg-dr
Cobalt	Co-Sedmt	9.99 *	mg/kg-dr
Copper	Cu-Sedmt	38.3 *	mg/kg-dr
Lead	Pb-Sedmt	61.6 *	mg/kg-dr
Manganese	Mn-Sedmt	575E*	mg/kg-dr
Nickel	Ni-Sedmt	16.3 *	mg/kg-dr
Silver	Ag-Sedmt	3.39 *	mg/kg-dr
Vanadium	V -Sedmt	17.8E*	mg/kg-dr
Zinc	Zn-Sedmt	75.4E*	mg/kg-dr
Antimony	Sb-Sedmt	3.0UN	mg/kg-dr
Aluminum	Al-Sedmt	13000 *	mg/kg-dr
Selenium	Se-Sedmt	NAR	mg/kg-dr
Iron	Fe-Sedmt	18200E*	mg/kg-dr
Thallium	Tl-Sedmt	NAR	mg/kg-dr

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352375

Description: SS06-2

Source: Sediment (General)

Begin Date: 92/08/26 12:30

Metals - Specified		Sediment
		Result Units
Selenium	Se-Sedmt	0.45P* mg/kg-dr
Thallium	Tl-Sedmt	0.25UN mg/kg-dr
Mercury	Hg-Sedmt	0.58N* mg/kg-wt

Metals - ICP Scan		Sediment
		Result Units
Calcium	Ca-Sedmt	4510E* mg/kg-dr
Magnesium	Mg-Sedmt	3580 * mg/kg-dr
Sodium	Na-Sedmt	808B* mg/kg-dr
Potassium	K -Sedmt	687 * mg/kg-dr
Arsenic	As-Sedmt	19.9 * mg/kg-dr
Barium	Ba-Sedmt	298 * mg/kg-dr
Beryllium	Be-Sedmt	1.04 * mg/kg-dr
Cadmium	Cd-Sedmt	0.81P* mg/kg-dr
Chromium	Cr-Sedmt	10.1 * mg/kg-dr
Cobalt	Co-Sedmt	9.85 * mg/kg-dr
Copper	Cu-Sedmt	383 * mg/kg-dr
Lead	Pb-Sedmt	533E* mg/kg-dr
Manganese	Mn-Sedmt	317 * mg/kg-dr
Nickel	Ni-Sedmt	71.8E* mg/kg-dr
Silver	Ag-Sedmt	3.03N* mg/kg-dr
Vanadium	V -Sedmt	75.2 * mg/kg-dr
Zinc	Zn-Sedmt	403E* mg/kg-dr
Antimony	Sb-Sedmt	3.0UN mg/kg-dr
Aluminum	Al-Sedmt	6940 * mg/kg-dr
Selenium	Se-Sedmt	NAR mg/kg-dr
Iron	Fe-Sedmt	17400 * mg/kg-dr
Thallium	Tl-Sedmt	NAR mg/kg-dr

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352376

Description: SS07-1

Source: Sediment (General)

Begin Date: 92/08/26 12:10

Metals - Specified		Sediment	
		Result	Units
Selenium	Se-Sedmt	0.20UN	mg/kg-dr
Thallium	Tl-Sedmt	0.25UN	mg/kg-dr
Mercury	Hg-Sedmt	0.02UN	mg/kg-wt

Metals - ICP Scan		Sediment	
		Result	Units
Calcium	Ca-Sedmt	3060 *	mg/kg-dr
Magnesium	Mg-Sedmt	6180 *	mg/kg-dr
Sodium	Na-Sedmt	463B*	mg/kg-dr
Potassium	K -Sedmt	2870 *	mg/kg-dr
Arsenic	As-Sedmt	44.5 *	mg/kg-dr
Barium	Ba-Sedmt	98.6 *	mg/kg-dr
Beryllium	Be-Sedmt	0.599 *	mg/kg-dr
Cadmium	Cd-Sedmt	0.29P*	mg/kg-dr
Chromium	Cr-Sedmt	10.8 *	mg/kg-dr
Cobalt	Co-Sedmt	10.2 *	mg/kg-dr
Copper	Cu-Sedmt	31.6 *	mg/kg-dr
Lead	Pb-Sedmt	24.8 *	mg/kg-dr
Manganese	Mn-Sedmt	491 *	mg/kg-dr
Nickel	Ni-Sedmt	15.3 *	mg/kg-dr
Silver	Ag-Sedmt	4.31 *	mg/kg-dr
Vanadium	V -Sedmt	18.1 *	mg/kg-dr
Zinc	Zn-Sedmt	50.3 *	mg/kg-dr
Antimony	Sb-Sedmt	3.0UN	mg/kg-dr
Aluminum	Al-Sedmt	12600 *	mg/kg-dr
Selenium	Se-Sedmt	NAR	mg/kg-dr
Iron	Fe-Sedmt	23800 *	mg/kg-dr
Thallium	Tl-Sedmt	NAR	mg/kg-dr

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Laboratory: EPA, Manchester

Sample No: 92 352377

Description: SS07-2

Source: Sediment (General)

Begin Date: 92/08/26 12:10

Metals - Specified		Sediment
		Result Units
Selenium	Se-Sedmt	0.46P* mg/kg-dr
Thallium	Tl-Sedmt	0.25UN mg/kg-dr
Mercury	Hg-Sedmt	0.057N* mg/kg-wt

Metals - ICP Scan		Sediment
		Result Units
Calcium	Ca-Sedmt	8050E* mg/kg-dr
Magnesium	Mg-Sedmt	3360 * mg/kg-dr
Sodium	Na-Sedmt	906B* mg/kg-dr
Potassium	K -Sedmt	933 * mg/kg-dr
Arsenic	As-Sedmt	39.9 * mg/kg-dr
Barium	Ba-Sedmt	597 * mg/kg-dr
Beryllium	Be-Sedmt	1.45 * mg/kg-dr
Cadmium	Cd-Sedmt	0.51P* mg/kg-dr
Chromium	Cr-Sedmt	9.94 * mg/kg-dr
Cobalt	Co-Sedmt	8.58 * mg/kg-dr
Copper	Cu-Sedmt	184 * mg/kg-dr
Lead	Pb-Sedmt	292 * mg/kg-dr
Manganese	Mn-Sedmt	371 * mg/kg-dr
Nickel	Ni-Sedmt	33.9 * mg/kg-dr
Silver	Ag-Sedmt	3.62N* mg/kg-dr
Vanadium	V -Sedmt	49.1 * mg/kg-dr
Zinc	Zn-Sedmt	63.7E* mg/kg-dr
Antimony	Sb-Sedmt	3.0UN mg/kg-dr
Aluminum	Al-Sedmt	10200 * mg/kg-dr
Selenium	Se-Sedmt	NAR mg/kg-dr
Iron	Fe-Sedmt	20400 * mg/kg-dr
Thallium	Tl-Sedmt	NAR mg/kg-dr

(Sample Complete)

23-OCT-92
10:21:44

EPA Region X Lab Management System
Sample/Project Analysis Results

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Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Blank ID: BLANK

Metals - Specified	Sediment
Blank #4	Result Units
Mercury Hg-Sedmt	0.02U mg/kg-wt

(Sample Complete)

23-OCT-92
10:21:44

EPA Region X Lab Management System
Sample/Project Analysis Results

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Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Blank ID: ES920911A

Metals - Specified	Sediment	
Blank #1	Result	Units
Selenium Se-Sedmt	0.20U	mg/kg-dr
Thallium Tl-Sedmt	0.25UN	mg/kg-dr

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Blank ID: ES920916A

Metals - Specified		Sediment	
	Blank #2	Result	Units
Selenium	Se-Sedmt	0.20U	mg/kg-dr
Thallium	Tl-Sedmt	0.25UN	mg/kg-dr
Metals - ICP Scan		Sediment	
	Blank #1	Result	Units
Calcium	Ca-Sedmt	55.8 *	mg/kg-dr
Magnesium	Mg-Sedmt	3.04 *	mg/kg-dr
Sodium	Na-Sedmt	92.8 *	mg/kg-dr
Potassium	K -Sedmt	40.U	mg/kg-dr
Arsenic	As-Sedmt	3.0U	mg/kg-dr
Barium	Ba-Sedmt	0.17P*	mg/kg-dr
Beryllium	Be-Sedmt	0.10U	mg/kg-dr
Cadmium	Cd-Sedmt	0.20U	mg/kg-dr
Chromium	Cr-Sedmt	0.50U	mg/kg-dr
Cobalt	Co-Sedmt	0.30U	mg/kg-dr
Copper	Cu-Sedmt	1.10 *	mg/kg-dr
Lead	Pb-Sedmt	2.0U	mg/kg-dr
Manganese	Mn-Sedmt	0.10U	mg/kg-dr
Nickel	Ni-Sedmt	1.0U	mg/kg-dr
Silver	Ag-Sedmt	0.30U	mg/kg-dr
Vanadium	V -Sedmt	0.20U	mg/kg-dr
Zinc	Zn-Sedmt	0.68P*	mg/kg-dr
Antimony	Sb-Sedmt	3.0U	mg/kg-dr
Aluminum	Al-Sedmt	2.0U	mg/kg-dr
Selenium	Se-Sedmt	NAR	mg/kg-dr
Iron	Fe-Sedmt	2.43 *	mg/kg-dr
Thallium	Tl-Sedmt	NAR	mg/kg-dr

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Blank ID: ES920916B

Metals - ICP Scan	Sediment	
Blank #2	Result	Units
Calcium	Ca-Sedmt	1.21 *
Mgnsium	Mg-Sedmt	0.24P*
Sodium	Na-Sedmt	1.0U
Potssium	K -Sedmt	40.U
Arsenic	As-Sedmt	3.0U
Barium	Ba-Sedmt	0.10U
Berylium	Be-Sedmt	0.10U
Cadmium	Cd-Sedmt	0.20U
Chromium	Cr-Sedmt	0.79P*
Cobalt	Co-Sedmt	0.30U
Copper	Cu-Sedmt	0.44P*
Lead	Pb-Sedmt	2.0U
Mangnese	Mn-Sedmt	0.10U
Nickel	Ni-Sedmt	1.0U
Silver	Ag-Sedmt	0.30U
Vanadium	V -Sedmt	0.20U
Zinc	Zn-Sedmt	0.40U
Antimony	Sb-Sedmt	3.0U
Aluminum	Al-Sedmt	2.0U
Selenium	Se-Sedmt	NAR
Iron	Fe-Sedmt	1.7P*
Thallium	Tl-Sedmt	NAR

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Blank ID: ES920923

Metals - ICP Scan	Sediment	
Blank #1	Result	Units
Calcium	Ca-Sedmt	86.0 *
Mgnsium	Mg-Sedmt	5.20 *
Sodium	Na-Sedmt	205 *
Potssium	K -Sedmt	40.U
Arsenic	As-Sedmt	3.0U
Barium	Ba-Sedmt	0.14P*
Beryllium	Be-Sedmt	0.10U
Cadmium	Cd-Sedmt	0.20U
Chromium	Cr-Sedmt	0.50U
Cobalt	Co-Sedmt	0.30U
Copper	Cu-Sedmt	1.80 *
Lead	Pb-Sedmt	2.0U
Mangnese	Mn-Sedmt	0.10U
Nickel	Ni-Sedmt	1.0P*
Silver	Ag-Sedmt	0.30U
Vanadium	V -Sedmt	0.20U
Zinc	Zn-Sedmt	0.84P*
Antimony	Sb-Sedmt	3.0U
Aluminum	Al-Sedmt	2.0U
Selenium	Se-Sedmt	5.0U
Iron	Fe-Sedmt	2.86 *
Thallium	Tl-Sedmt	5.0U

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Blank ID: ES920924A

Metals - ICP Scan	Sediment	
Blank #3	Result	Units
Calcium	Ca-Sedmt	26.3 *
Magnesium	Mg-Sedmt	0.98P*
Sodium	Na-Sedmt	3.2P*
Potassium	K -Sedmt	40.U
Arsenic	As-Sedmt	3.0U
Barium	Ba-Sedmt	0.10U
Beryllium	Be-Sedmt	0.10U
Cadmium	Cd-Sedmt	0.20U
Chromium	Cr-Sedmt	0.50U
Cobalt	Co-Sedmt	0.30U
Copper	Cu-Sedmt	1.05 *
Lead	Pb-Sedmt	2.0U
Manganese	Mn-Sedmt	0.10U
Nickel	Ni-Sedmt	1.0U
Silver	Ag-Sedmt	0.30U
Vanadium	V -Sedmt	0.20U
Zinc	Zn-Sedmt	0.40U
Antimony	Sb-Sedmt	3.0U
Aluminum	Al-Sedmt	2.0U
Selenium	Se-Sedmt	5.0U
Iron	Fe-Sedmt	0.79P*
Thallium	Tl-Sedmt	5.0U

(Sample Complete)

Project: TEC-575A AVERY RR DUMP AND ROUNDHOUSE

Officer: MZR

Account: FA10PUZZ

Blank ID: ES920924B

Metals - ICP Scan	Sediment	
Blank #4	Result	Units
Calcium	Ca-Sedmt	6.19 * mg/kg-dr
Mgnesium	Mg-Sedmt	0.95P* mg/kg-dr
Sodium	Na-Sedmt	1.0U mg/kg-dr
Potssium	K -Sedmt	40.U mg/kg-dr
Arsenic	As-Sedmt	3.0U mg/kg-dr
Barium	Ba-Sedmt	0.10U mg/kg-dr
Beryllium	Be-Sedmt	0.10U mg/kg-dr
Cadmium	Cd-Sedmt	0.20U mg/kg-dr
Chromium	Cr-Sedmt	0.50U mg/kg-dr
Cobalt	Co-Sedmt	0.30U mg/kg-dr
Copper	Cu-Sedmt	0.81P* mg/kg-dr
Lead	Pb-Sedmt	2.0U mg/kg-dr
Mangnese	Mn-Sedmt	0.10U mg/kg-dr
Nickel	Ni-Sedmt	1.0U mg/kg-dr
Silver	Ag-Sedmt	0.30U mg/kg-dr
Vanadium	V -Sedmt	0.20U mg/kg-dr
Zinc	Zn-Sedmt	0.40U mg/kg-dr
Antimony	Sb-Sedmt	3.0U mg/kg-dr
Aluminum	Al-Sedmt	2.0U mg/kg-dr
Selenium	Se-Sedmt	5.0U mg/kg-dr
Iron	Fe-Sedmt	1.9P* mg/kg-dr
Thallium	Tl-Sedmt	5.0U mg/kg-dr

(Sample Complete)